

CLAIMS

What is claimed is:

1. A high voltage isolation barrier structure, comprising:
a circuit board comprising a substrate, the substrate comprising a first side and
5 a second side;
a capacitive structure comprising:
a first electrode disposed on the first side of the substrate; and
a second electrode disposed on the second side of the substrate; and
wherein the substrate intermediate the first and second electrodes functions as
10 a dielectric material within the capacitive structure.
2. The high voltage isolation barrier structure of claim 1, further
comprising:
system side circuitry coupled to the first electrode; and
15 line side circuitry coupled to the second electrode.
3. The high voltage isolation barrier structure of claim 1, wherein the
circuit board is contained within a data access arrangement.
- 20 4. The high voltage isolation barrier structure of claim 1, wherein the
circuit board is contained within a computer system.
5. The high voltage isolation barrier structure of claim 4, wherein the
computer system further comprises a modem; and
25 the capacitive structure is contained within the modem.
6. The high voltage isolation barrier structure of claim 1, wherein the
circuit board comprises radio frequency circuitry.

7. The circuit board capacitor structure of claim 1, wherein the circuit board comprises a multi-layer circuit board having a plurality of substrates.

8. A data access arrangement, comprising:

- 5 a circuit board having a substrate with a first side and a second side;
a capacitor having a first electrode formed on the first side of the substrate and
a second electrode formed on the second side of the substrate;
system side circuitry coupled to the first electrode; and
line side circuitry coupled to the second electrode.

10 9. The data access arrangement of claim 8, the system side circuitry is configurable to communicate with host system circuitry, and the line side is configurable to communicate over a telephone network.

15 10. The data access arrangement of claim 8, wherein the capacitor provides high voltage isolation between the system side circuitry and the line side circuitry.

11. The data access arrangement of claim 8, wherein the first and second electrodes are substantially overlapping.

20 12. The data access arrangement of claim 8, wherein at least two portions selected from a portion of the system side circuitry and a portion of the line side circuitry are formed on opposite sides of the substrate.

13. The data access arrangement of claim 8, the first and second electrodes being formed of copper.

25 14. The data access arrangement of claim 8, wherein data and control information are communicated between the system side circuitry and the line side circuitry in a serialized digital format via the capacitor.

15. The data access arrangement of claim 8, further comprising:

at least one additional capacitor having a first electrode formed on the first side of the substrate and a second electrode formed on the second side of the substrate, the at least one additional capacitor coupled between the system side circuitry and the line side circuitry.

5 16. The data access arrangement of claim 8, wherein the circuit board comprises a multi-layer circuit board having a plurality of substrates.

 17. The data access arrangement of claim 8, the first electrode being formed on a plurality of substrates.

10 18. The data access arrangement of claim 8, wherein the first and second electrodes are printed on the substrate by a screening process.

 19. A method of manufacturing a communications device, comprising:
 providing a circuit board having at least one substrate with a first side and a second side;

 forming a first electrode on the first side of the substrate;
15 forming a second electrode on the second side of the substrate, wherein the substrate intermediate the first and second electrodes functions as a dielectric material such that a capacitive structure is formed; and

 electrically coupling first communication circuitry to the first electrode and second communication circuitry to the second electrode.

20 20. The method of claim 19, wherein the first and second communication circuitry and capacitive structure form at least a portion of a data access arrangement.

 21. The method of claim 20, the capacitive structure providing high voltage isolation between the first communication circuitry and the second communication circuitry.

25 22. The method of claim 19, wherein the first and second electrodes are substantially overlapping.

23. The method of claim 19, wherein the circuit board comprises a multi-layer circuit board having a plurality of substrates.

24. The method of claim 23, the step of forming a first electrode further comprising forming the first electrode on the sides of more than one substrate.

5 25. The method of claim 19, further comprising:
providing the first communication circuitry on the first side of the substrate;
and
providing the second communication circuitry on the second side of the substrate.

10 26. The method of claim 19, wherein the first and second electrodes are formed of copper.

27. The method of claim 19, wherein the first and second electrodes are printed on the substrate by a screening process.

15 28. The method of claim 19, wherein data is communicated between the first communication circuitry and the second communication circuitry via the capacitive structure.

29. A computer system, comprising:
a data bus;
a processor coupled to the data bus; and
20 a modem coupled to the data bus, the modem comprising:
a circuit board having a substrate with a first side and a second side;
a capacitor having a first electrode formed on the first side of the substrate and a second electrode formed on the second side of the substrate;
system side circuitry coupled to the first electrode, the system side circuitry
25 configurable to communicate with the data bus; and
line side circuitry coupled to the second electrode, the line side circuitry configurable to communicate with a telephone network.

30. The computer system of claim 29, wherein the capacitor provides high voltage isolation between the system side circuitry and the line side circuitry.

31. The computer system of claim 29, wherein the circuit board is a multi-layer circuit board having a plurality of substrates, the first electrode being formed on
5 more than one substrate.

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